

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 4

April, 1902

No. 40

THE NEW ENGLAND POLYGONUMS OF THE SECTION AVICULARIA.

B. L. ROBINSON.

(Plate 35.)

It has long been known to several careful observers that our Polygonums of the Section *Avicularia* (Bird's Knotgrasses) still offer many perplexing problems. Even some of the commoner forms of this group fail to find recognition or adequate characterization in current manuals, and the section is rendered difficult alike by a general habital similarity, inconspicuous flowers without very striking differences, and by the puzzling seasonal changes through which the individual often passes from spring to autumn. Thus, at the outset nearly all forms of this section tend to be suberect, and, if the conditions of growth are at all favorable, produce upon the main stem lanceolate or more often elliptical leaves, which are relatively large (often 2 to 4 cm. long). With the successive branching, which in *P. aviculare* commonly starts at the very base, the plants in many cases quickly derive a different habit, since the branches are often quite prostrate and always bear leaves of smaller and smaller size. It thus comes about that an old sprawling specimen which has shed all its earlier foliage and retains only the much reduced leaves of the ultimate branchlets possesses so little likeness to the earlier stages of the same plant as to be easily taken for a distinct species. The difference is frequently heightened by changes of color and by the degeneration of the stipules, which are at first whole and white or often silvery, but later turn to brown bristle-formed shreds. To these matters which, however perplexing to the beginner, should not long mislead the careful student, there are added more serious diffi-

culties, which are especially apt to be shown by annuals, namely those which arise from the very unequal nourishment of the different individuals. This especially affects a group of plants which, while quite ready to luxuriate in the best of soil, are equally capable of a hardy advance into the packed earth of foot-paths or sterile sands, where they suffer every degree of inanition. Crowding also affects their manner of growth; thus the typical *P. aviculare* is normally a prostrate plant, but when crowded the individuals are often perfectly erect. Finally, the Polygonums of this section show a fondness for brackish marshes and tidal flats, where they become as one may say maritimized, taking on very gradually the thicker leaves and more fleshy character so common in halophytes. It is easy to see, therefore, why these species are confused in most herbaria.

In interpreting the maritime forms I have been especially assisted by Mr. W. P. Rich, who has devoted much attention to the group and brought together an interesting suite of specimens. I am also indebted to Prof. N. L. Britton and Dr. J. K. Small for the privilege of examining and discussing with them many specimens in the herbarium of the New York Botanical Garden, and to Mr. F. V. Coville and Dr. J. N. Rose for the loan of many sheets from the government collections at Washington. I have been kindly permitted to examine also the Polygonums in the herbaria of Brown University (including the recently acquired herbarium of Prof. W. W. Bailey), the University of Vermont, and Middlebury College, and in the private collections of Dr. E. H. Eames and Messrs. Walter Deane, E. F. Williams, E. L. Rand, and J. F. Collins. Plate 35, illustrating nearly all the forms here discussed, has been drawn with great care by Mr. F. Schuyler Matthews.

The section *Avicularia*, Meisn. Prodr. Gen. Polyg. 43, 85, is characterized by incumbent cotyledons, triquetrous achenes, axillary flowers, and 2-parted or 2-lobed stipules. None of these characters separates the section sharply from other groups in the genus, but in the case of our own northeastern species there never need be doubt in recognizing the section, the axillary flowers alone being a sufficient guide, except in *P. arenarium*, found only once on our coast.

- * Achenes at maturity conspicuously exserted beyond the inclosing calyx.
- + Prostrate, maritime; achenes broadly ovate; flowers relatively large, 2 to 4 mm. in length.

P. MARITIMUM, L. Foliage very pale and glaucous, often nearly white: leaves of the branches small, narrowly oblong, very thick,

usually exceeding the short thick internodes; stipules silvery, conspicuous: sepals 5, broadly obovate, petaloid, contracted at the base, the broad roseate tips inclining to spread in fruit. — Spec. Pl. i. 361 (1753); Meisn. Prodr. Gen. Polyg. 89, & in DC. Prodr. xiv. 88; Eng. Bot. t. 2805; Gray, Man. ed. 6, 439; Small, Monog. Gen. Polyg. 100, t. 37. *P. marinum*, var. *roseum*, Pursh, Fl. 269 (1814). *P. glaucum*, Nutt. Gen. i. 254 (1818).—Sea beaches. MASSACHUSETTS: Woods Hole, 1872, *E. Palmer*; Falmouth, 1 Sept. 1894, *J. R. Churchill*, Sept. 1901, *Miss E. C. Bridge*; Nantucket, Sconset, Aug. 1875, *L. L. Dame*; Marthas Vineyard, 1865, *J. W. Robbins*; Gay Head, *S. Harris*; Edgartown, 11 Sept. 1901, *M. L. Fernald*. RHODE ISLAND; Newport, *J. W. Bailey*; Block Island, *S. T. Olney*. NEW YORK, Hook Point, Long Island, 12 Aug. 1878, *E. S. Miller*. NEW JERSEY, *A. Gray*. NORTH CAROLINA, Carolina Beach, *F. V. Coville*, no. 155. SOUTH CAROLINA, Sullivans Island, *H. W. Ravenel*. FLORIDA, *Chapman*. (Eu.) PLATE 35, FIGS. 17-19.

P. Fowleri, nov. sp. Prostratum glabrum ramosum subcarnosum pallidi-viride; foliis caulinis anguste ellipticis internodia paullo superantibus saepissime obtusis 1.2-3 cm. longis 6-9 mm. latis subtiliter venosis, eis ramorum ramulorumque gradatim minoribus; floribus subsessilibus solitariis vel binis; calice profunde 5-partito, lobis oblongis obtusis subaequalibus albescentibus vel rubescentibus basi non angustatis; achenio olivaceo 4 mm. longo a basi late ovato in rostrum acuminatum attenuato saepissime a calyce arcte amplectente valde exserto.—*P. maritimum*, Fowler, Prelim. List Pl. N. Bruns. 53; Macoun, Cat. Canad. 408 (excl. synonym.); Small, Bull. Torr. Club, xix. 362, as to pl. Mt. Desert; not L. *P. Rayi*, Small, Monog. Gen. Polyg. 98, at least as to northern part of range; not Meisn. *P. Raii*, Rand & Redfield, Fl. Mt. Desert Isl. 141, 142; not Babingt.—Sandy shores. NEW BRUNSWICK, 1869, *J. Fowler* (type, in hb. Gray). ANTICOSTI, Salt Lake, 10 Aug. 1883, *J. Macoun*. QUEBEC, Rivière du Loup, 4 Aug. 1896, *E. Brainerd*. MAINE: Mt. Desert Island, Aug. 1891, *K. Furbish*; Southwest Harbor, 24 Sept. 1893, *E. L. Rand*; Great Cranberry Isle, 29 Aug. 1892, *E. L. Rand*; Broad Cove, 13 Sept. 1894, *E. L. Rand*; shore of Little Cranberry Isle, 24 July, 1899, *E. F. Williams*; Cape Newagen, Southport, 7 Aug. 1894, *M. L. Fernald*. PLATE 35, FIGS. 14, 15.

This plant, which I take pleasure in naming for its discoverer, Prof. James Fowler of Kingston, Ontario, bears such a close resemblance to *P. Raii* (or better *P. Roberti*) of the Old World that it is by no means remarkable that it has of late been confused with that species. It differs, however, in several features. The leaves are more obtuse and are not nigrescent in drying, the achenes are smaller and much more sharply beaked and the less petaloid calyx lobes are oblong, not oval.

P. ROBERTI, Loisel. Mém. Soc. Linn. Par. vi. 409 (1827); Hook.

f. & Jacks. Ind. Kew. ii. 598. *P. Raii*, Babington, Trans. Linn. Soc. Lond. xvii. 458 (1836), & Man. Brit. Bot. first six editions. *P. Rayi*, Meisn. in DC. Prodr. xiv. 88 (a mistaken orthography adopted by several American botanists but not employed by Babington notwithstanding reference to 2d ed. of his Man. by Hook. f. & Jacks. l. c.).— This species, which may be distinguished from *P. Fowleri* by the characters given above, may occur upon the coast of our middle states. There is a specimen rather closely simulating it in the herbarium of the New York Botanical Garden, collected at Portsmouth, Virginia, by Rugel, which without a re-examination I cannot pronounce upon more definitely. The name *Roberti* was according to Meisner used to cover mixed material but when previously described elements have been excluded must stand for this species. PLATE 35, FIG. 16.

+ + Erect ; achenes lanceolate.

P. EXSERTUM, Small. Tall, much branched: leaves lanceolate, acutish: flowers borne on slender at length exerted pedicels: calyx small, greenish, inconspicuous, much shorter than the lanceolate attenuate olivaceous much exerted achenes.— Bull. Torr. Bot. Club, xxi. 172 (1894), & Monog. Gen. Polyg. 112, t. 43.— Brackish meadows. MAINE, York Harbor, *E. P. Bicknell*, acc. to Small. RHODE ISLAND, Barrington, *S. T. Olney*. CONNECTICUT: Orange, beach at Savin Rock, 11 Sept. 1895, *C. H. Bissell*, no. 1239; East Haven, *A. L. Winton*. NEW YORK, New York City, 24 Sept. 1894, *E. P. Bicknell*. NEW JERSEY, Absecom, *W. Boott*. Also in the interior from Illinois to the Saskatchewan. PLATE 35, FIGS. 12, 13.

* * Achenes nearly or quite included.

+ Branches terete or nearly so.

++ Flowers small; sepals (normally 5) greenish white mostly with a roseate tinge, 1.3 to 1.8 mm. long.

= Pedicels included in the sheaths; flowers distinctly axillary.

P. prolificum. Erectum 3–5 dm. altum ramosum vel ramosissimum; foliis lineari-oblongis crassiusculis obtusis vel plus minusve acutis in speciminibus siccatis rugulosis-venosis 1–2 cm. longis 1–4 mm. latis; stipularum laciniis setiformibus flores subsessiles valde superantibus; calyce 5-partito, lobis oblongis apice rotundatis 3 exterioribus viridibus albo-marginatis saepissime rubescentibus, in maturitate reticulati-venosis interioribus duos tenuiores albos paullo superantibus leviter cucullatis 2 mm. longis; staminibus 3; achenio triquetro brunneo acuto 2 mm. longo, faciebus lanceolati-deltaideis leviter concavis lucidis minutissime punctatis.—*P. maritimum*, Young, Cat. Fl. Oak Isl. 14 (1883), not L. *P. ramosissimum*, var. *prolificum*, Small, Bull. Torr. Club, xxi. 271 (1894), & Monog. Gen. Polyg. 114.

— MAINE, York Harbor, 16 Aug. 1893, *E. P. Bicknell*. NEW HAMPSHIRE: Rye Beach, open grassy field, 16 Aug. 1886, *W. Deane*, on salt marsh, 19 Sept. 1901, *W. P. Rich & E. F. Williams*; Hampton Falls, on salt marsh, 22 Sept. 1901, *E. F. Williams*. MASSACHUSETTS: Plum Island, on sand dunes, 4 Aug. 1899, *E. F. Williams*; Oak Island, Aug. 1877, 20 Sept. and 1 Oct. 1882, *H. A. Young*, in sand, 14 Sept. 1900, *W. Deane* (pl. 1 m. in diameter), salt marsh, 16 Sept. 1899, *W. P. Rich*; Cambridgeport, on flats of the Charles River, Oct. 1901, *B. L. Robinson & M. L. Fernald*; Dorchester, Cedar Grove, on salt marsh, 14 Sept. 1888, *W. Deane*; Milton, on salt marsh near Neponset River, 1 Sept. 1883, *W. Deane*; Plymouth Road, 11 Aug. 1878, *E. & C. E. Faxon*; Sea View, Marshfield, on shore of salt creek, 13 Oct. 1895, *E. F. Williams*; Marthas Vineyard, 20 Aug. 1865, *J. W. Robbins*; North Scituate, 6 Sept. 1897, *S. Harris*. RHODE ISLAND; Providence, 30 Aug. 1893, *J. F. Collins*; East Providence, 1879, *W. W. Bailey*. CONNECTICUT: Fairfield, 26 Sept. 1897, and 4 Sept. 1898, *E. H. Eames*; Bridgeport, banks of Cedar Creek (salt), 18 Aug. 1898, *E. H. Eames*; Orange, *C. H. Bissell*, nos. 985, 1214, 1240; Cos Cob, *C. H. Bissell*, no. 5416; Norwalk, *C. H. Bissell*, no. 5171. NEW YORK, Peconic River, L. I., 26 Aug. 1878, *E. S. Miller*. VIRGINIA, Eastville, Northampton Co., Sept. 1878, *W. M. Canby*. Also in Kansas and Nebraska, where quite indistinguishable from the Atlantic form. PLATE 35, FIG. 4.

This is one of several plants which are often confused in herbaria with *P. ramosissimum*. It differs from that species constantly in its smaller sessile flowers and in the shape of the leaves. As found on our sea coast it does not have the yellow green color of *P. ramosissimum* but is bluish green although often whitened by a parasitic fungus. *P. prolificum* shows close affinity to *P. rurivagum*, Jord. of Europe, but differs from it in the habitually obtusish leaves, included achenes, and more robust habit.

P. AVICULARE, L. Prostrate or, especially when young or crowded, erect: leaves lanceolate, acute, acutish, or obtuse, not at all rigid or fleshy, bluish green; flowers much as in the preceding but surpassing the more hyaline remnants of the stipules; calyx rubescent sometimes deep crimson; achenes dark brown, dull, minutely granular-striate.—Spec. Pl. i. 362 (1753); Meisn. in DC. Prodr. xiv. 97; Small, Monog. Gen. Polyg. 104, t. 39. *P. Bellardi*, Small, l. c. 106, t. 40 (effuse form); Britt. & Brown, Illustr. Fl. i. 562; Britt. Man. 363; not All.—Common weed of dooryards and beaten paths, very tough, persistent, and tenacious of life. PLATE 35, FIG. 5. As noted by Meisner the species is polymorphous; with us occur the following varieties, all freely intergrading.

Var. LITTORALE, Koch. Prostrate; stems stouter, somewhat fleshy and a little lignescent towards the base: leaves oblong, thick-

ish, sometimes acute but with us more often obtuse or rounded at the apex.—Synop. Fl. Germ. 618 (1837). *P. littorale*, Link, Enum. Hort. Berol. i. 385 (1821); Meisn. in DC. Prodr. xiv. 98; Small, Monog. Gen. Polyg. 102, t. 38. The place of publication of the species is traditionally but incorrectly cited as Schrader's Journ. i. 54 (1799), although the name *littorale* appears for the first time as *P. maritimum** *littorale*, Link in Pers. Syn. i. 439 (1805).—Sea coast. NEW BRUNSWICK, Carleton, 7 Aug. 1877, *J. Fowler*. NEW HAMPSHIRE, New Castle, on sandy wayside near beach, 19 Sept. 1901, *W. P. Rich*. MASSACHUSETTS: Revere, Oak Island, 29 July, 1900, *W. P. Rich*; South Boston, waste land, 20 Aug. 1899, *W. P. Rich*; Scituate, gravel near beach, 8 Sept. 1901, *W. P. Rich*. RHODE ISLAND, Providence, on cove land, 18 Sept. 1899, *J. F. Collins*. CONNECTICUT: *H. S. Clark*, no. 8; Black Rock, 5 Aug. 1898, *E. H. Eames*. Also southward and in the interior, but less well marked. Repeated efforts to substantiate in a suite of specimens the very different characters adduced for the distinction of *P. littorale* by Koch (Linnaea, xxii. 204), Meisner (l. c.), and Small (l. c.), have failed to show them constant as distinctions or even concomitant as variables. PLATE 35, FIG. 8.

Var. VEGETUM, Ledeb. Luxuriant, more or less erect, lighter green than the typical form: leaves large, elliptical, 3 to 4 cm. in length, somewhat petioled, the margins crisped.—Fl. Ross. iii. 532 (1849); Meisn. (l. c.) 97.—Rich soil, especially in shade. NEWFOUNDLAND, Quiddy Viddy, 2 Aug. 1894, *Robinson & von Schrenk*. MAINE, Yarmouth on salt flats, 26 July, 1901, *E. B. Chamberlain*. VERMONT, Manchester, 4 July, 1898, *M. A. Day*. This variety seems scarcely more than a rich-soil form; it is doubtless widely distributed in America. (Eu.) PLATE 35, FIG. 6.

The opposite tendency is shown by Var. ANGUSTISSIMUM, Meisn. l. c. (*P. neglectum*, Bess. Enum. Fl. Volh. 45, 1821; *P. aviculare*, var. *neglectum*, Aschers. Fl. Brandenb. 51, 1864; and? *P. aviculare*, var. *laxum*, Ledeb. l. c.) with leaves very narrowly lanceolate or linear. This narrow-leaved form is by no means rare in America but it is poorly marked and shows no constancy in the length of the leaves, degree of diffuseness, etc. PLATE 35, FIG. 7.

= = Filiform pedicels exerted; flowers equalling or exceeding their subtending bracts and together forming rather definite terminal racemes.

P. ARENARIUM, Waldst. & Kit. Decumbent, branched from the base: leaves lance-linear, thickish and veiny: flowers campanulate: calyx lobes 5, oval, green with thin petaloid red margins.—Pl. Rar. Hung. i. 69, 6. 67 (1802).—RHODE ISLAND, Providence, on cove land, 5 July, 1892, *W. W. Bailey & J. F. Collins*. A waif from the Mediterranean Region to be recognized by its narrow slightly rigid leaves, much reduced bracts, and small but attractive flowers in terminal almost naked racemes.

++ Flowers larger ; sepals 2 to 3 mm. long ; the pedicels exserted ; foliage yellowish green.

= Leaves elliptical, large for this section of the genus.

P. ERECTUM, L. Erect or decumbent, bright yellowish green, 1 to 6 dm. high ; stems rather stout, much branched : leaves elliptical to obovate, 2 to 4 cm. long, 5 to 15 mm. broad : flowers yellowish green : achene often slightly exserted.—Spec. Pl. i. 363 (1753) ; Wats. & Coult. in Gray, Man. ed. 6, 440 ; Small, Monog. Gen. Polyg. 110, t. 42. *P. aviculare*, var. *erectum*, Am. auth., not Ledeb. *P. ramosissimum*, Meisn. in DC. Prodr. xiv. 97, not Michx.—Dry sunny rich soil, roadsides and especially on rubbish heaps, local. MAINE, Mechanic Falls, in streets, 19 Sept. 1897, *J. A. Allen*. VERMONT, Pownal, 8–11 Sept. 1899, *W. W. Eggleston*. MASSACHUSETTS : South Boston, waste ground, 25 Sept. 1878, *H. A. Young* ; Tewksbury, 24 Sept. 1899, *E. F. Williams* ; Cambridge, 30 Sept. 1884, *W. Deane*, 28 Aug. 1897, *W. P. Rich*, *E. F. Williams* ; Watertown, 12 Sept. 1879, *C. E. Perkins* ; Williamstown, 5 Sept. 1897, *J. R. Churchill*. RHODE ISLAND : East Providence, 26 Aug. 1878, *W. W. Bailey* ; Providence, Cat Swamp, 2 Sept. 1894 and 15 July, 1898, *J. F. Collins* ; Newport, on sandy roadside, 21 Sept. 1901, *W. P. Rich*. CONNECTICUT : Fairfield, 27 Aug. 1892, and 3 Sept. 1901, *E. H. Eames* ; Bridgeport, in sandy soil, 7 Sept. 1895, *E. H. Eames* ; Southington, waste ground, 1 Sept. 1897, *C. H. Bissell* ; Rocky Hill, roadside in rich soil, 3 Sept. 1901, *C. H. Bissell*, no. 5458. PLATE 35, FIG. 9.

= = Leaves lanceolate, narrowed at both ends.

P. RAMOSISSIMUM, Michx. Erect, tall, paniculately branched, 3 to 10 dm. high, yellowish green : stem leaves lanceolate, mostly acute, 3 to 5 cm. long, 5 to 8 mm. broad ; the rameal considerably smaller ; flowers 3 to 4 mm. long, yellowish green, not at all rubescent, borne on slender mostly exserted pedicels : sepals 6, the 3 outer sharply carinate, somewhat cucullate, green with yellow margins, the 3 inner smaller, thinner, yellow or yellowish white : achene included.—Fl. i. 237 (1803) ; Wats. & Coult. in Gray, Man. ed. 6, 440, as to char. and western part of range ; Small, Monog. Gen. Polyg. 114 in part, t. 44 (where the figure of the calyx shows but five lobes and fails to bring out their characteristic inequality).—MASSACHUSETTS, Truro, sandy bank on border of salt marsh, 30 Aug. 1899, *W. P. Rich*. PENNSYLVANIA, Allegheny County, *Zeigler*. ILLINOIS : Ringwood, *Vasey* ; Fountaindale and Ogle County, *Bebb* ; Bloomington, *Robinson*. IOWA : Guthrie, *J. A. Allen* ; Ames, *Pammel & Combs*, no. 201. WISCONSIN, Prairie du Chien, *T. J. Hale*. MISSOURI, Atchison County, *Bush*, no. 329. OKLAHOMA, Huntsville, *L. A. Blankinship* (distributed as *P. camporum*). KANSAS, Reno County,

Hitchcock, no. 1095 at least in part. NEBRASKA: Rock County, *Clements*, no. 287b; Cody, Sherry County, *J. M. Bates*, no. 568 (distributed as *P. camporum*); Hooker County, *Rydberg*, no. 1579, and no. 1763 (distributed as *P. camporum*), also no. 1771 (distributed as *P. litorale*). MINNESOTA: Pipestone, Aug. 1895, *M. Menzel*. NORTH DAKOTA, Leeds, *J. Lunnell*, nos. 62, 63. WYOMING, Blue Grass Creek, *A. Nelson*, no. 364 (distributed as *P. erectum*). Oregon, *Hall*, no. 448. Washington, Bingen, *Suksdorf*, no. 1406. PLATE 35, FIGS. 1-3.

Many more specimens might be cited but these will be sufficient to illustrate the species. It is noteworthy that of this typical form only one specimen (Mr. Rich's plant from Truro on Cape Cod) has been seen east of western Pennsylvania. Other eastern material referred here has on examination invariably proved to be *P. prolificum* or luxuriant and diffuse *P. aviculare*, or the following readily distinguishable color form.

Forma **atlanticum**, n. f. Calyce nullo modo flavescente, lobis 5 vel 6, exterioribus albo-marginatis plus minusve rubescentibus, interioribus albidis.—MAINE: Cumberland, in a hen yard, 31 Aug. 1901, *E. B. Chamberlain*; Old Orchard Beach, 29 Aug. 1898, *M. L. Fernald*, no. 2729. MASSACHUSETTS: Edgartown, margin of salt marsh, 11 Sept. 1901, *M. L. Fernald* (type of form); West Falmouth, 16 Sept. 1894, *J. R. Churchill*; North Scituate, on brackish meadow, 6 Sept. 1897, *W. P. Rich & E. F. Williams*; Cambridge, marshes of the Charles River, 4 Aug. 1901, *W. P. Rich*. RHODE ISLAND, Providence, on cove land, 10 July, 1892, *J. F. Collins*. CONNECTICUT: Milford, on brackish marsh, 28 Aug. 1895, *E. H. Eames*; Bridgeport, salt meadow bordering Ash Creek (stems very brittle), 8 Sept. 1901, *E. H. Eames*. This form, although always recognizable by the color of its flowers, shows no constant morphological difference from the western typical form, which as stated above has been found at one station on Cape Cod. It bears also a very striking resemblance to the true *P. Bellardi*, All., of the Old World, which scarcely differs save in its more reduced subulate and slightly rigid floral leaves.

P. BELLARDI, All. Closely like the preceding form, but the upper leaves reduced to very acute short and slightly rigid bracts scarcely or not at all surpassing the flowers in their axils.—Fl. Piedm. ii. 205, t. 90, f. 2 (1785).—Of this species, which appears to be frequent and rather widely distributed in Europe and Asia, I have seen only one satisfactory American specimen. That was collected on the South Boston dumping grounds, 3 July, 1879, by *E. & C. E. Faxon*. It was probably a temporarily established waif, as it has not been found during the last twenty years. PLATE 35, FIGS. 10-11.

+ + Branches rather sharply 3-4-angled; leaves lanceolate to linear, pointed at each end, subulate at the apex, of rather firm texture.

P. DOUGLASHII, Greene. Leaves revolute at the margins, otherwise nearly flat, obscurely or not at all plicate: flowers soon deflexed.—Bull. Calif. Acad. Sci. i. 125 (1884); Small, Monog. Gen. Polyg. 118, t. 46—VERMONT, Snake Mountain, in thin soil on sand rock, 14 Sept. 1878, and 22 Aug. 1900, *E. Brainerd*; Castleton, 22 Aug. and 12 Sept. 1897, *A. J. Grout & W. W. Eggleston*. Also westward along the Great Lakes to Rocky Mountains and Pacific Slope. PLATE 35, FIG. 21.

P. TENUE, Michx. Leaves strongly plicate lengthwise, furrowed on each side of the midnerve: flowers erect or nearly so.—Fl. i. 238 (1803); Meisn. in DC. Prodr. xiv. 100; Small, Monog. Gen. Polyg. 122, t. 48.—Dry sandy soil, mostly in open places. MASSACHUSETTS: Melrose, 28 Sept. 1878, *H. A. Young*; Malden, 25 Oct. 1886, *F. S. Collins*; Medford, 14 Oct. 1853, *W. Boott*; Arlington, 15 Aug. 1869, *W. Boott*; Cambridge, 4 Sept. 1891, *M. L. Fernald*; Weston, Summit of Doublet Hill, 14 Oct. 1894, *E. F. Williams*; Milton, on Blue Hill, 14 Aug. 1884, *C. E. Faxon*, 11 Aug. 1895, *E. F. Williams*. RHODE ISLAND, Providence, 10 Aug. 1877, *J. W. Congdon*; near Apponaug, 18 Aug. 1886, *J. F. Collins*. CONNECTICUT: New Haven, *D. C. Eaton*; Stratford, on dry exposed sands, 29 Aug. 1892, and 14 Sept. 1895, *E. H. Eames*; Fairfield, 14 Aug. 1891, *E. H. Eames*; Southington, in dry fields, 28 Sept. 1898, *L. Andrews*, no. 256, and *C. H. Bissell*. Also frequent and locally abundant southward and west to Minnesota. PLATE 35, FIG. 20.

GRAY HERBARIUM, Cambridge, Massachusetts.

EXPLANATION OF PLATE 35. — *Polygonum ramosissimum*: fig. 1, fruiting calyx; fig. 2, a part of the inflorescence; fig. 3, a stem leaf. *P. prolificum*: fig. 4, upper part of a branch. *P. aviculare*: fig. 5, end of a branch. *P. aviculare*, var. *vegetum*: fig. 6, leaf. *P. aviculare*, var. *angustissimum*: fig. 7, leaf. *P. aviculare*, var. *littorale*: fig. 8, a part of the stem and branches. *P. erectum*: fig. 9, end of a branch. *P. Bellardi*: fig. 10, inflorescence; fig. 11, a stem leaf. *P. exsertum*: fig. 12, fruiting calyx and mature achene; fig. 13, a stem leaf. *P. Fowleri*: fig. 14, a part of the stem; fig. 15, fruiting calyx and achene. *P. Roberti*: fig. 16, fruiting calyx and achene (drawn from English material). *P. maritimum*: fig. 17, branch; fig. 18, fruiting calyx and achene; fig. 19, a stem leaf. *P. tenue*: fig. 20, a stem leaf (cut transversely to show plicate character). *P. Douglasii*: fig. 21, a stem leaf.

Figs. 1, 12, 15, 16, and 18, are magnified to 5 diameters; the others are natural size.